

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE  
BOARD OF PATENT APPEALS AND INTERFERENCES

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In re Application of:	Herbert MAUERBERGER et al.
Serial No.:	10/789,707
Filed:	February 27, 2004
For:	SCANNING UNIT FOR SCANNING A MEASURING STANDARD
Examiner:	Sonji Johnson
Art Unit:	4135
Confirmation No.	9630
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I hereby certify that this correspondence is being electronically transmitted to the United States Patent and Trademark Office via the Office electronic filing system on August 3, 2009.

Signature: /Julie Forero/

**APPEAL BRIEF PURSUANT TO 37 C.F.R. § 41.37**

SIR:

On April 1, 2009, Appellants filed a Notice of Appeal from the last decision of the Examiner contained in the Final Office Action dated October 16, 2008 in the above-identified patent application.

In accordance with 37 C.F.R. § 41.37, this brief is submitted in support of the appeal of the rejections of claims 1 to 22. For at least the reasons set forth below, the rejections of claims 1 to 22 should be reversed.

**1. REAL PARTY IN INTEREST**

The real party in interest in the present appeal is DR. JOHANNES HEIDENHAIN GmbH of Traunreut, Federal Republic of Germany, which is the assignee of the entire right, title and interest in and to the present application.

**2. RELATED APPEALS AND INTERFERENCES**

There are no other prior or pending appeals, interferences or judicial proceedings known by the undersigned, or believed by the undersigned to be known to Appellants or the assignee, DR. JOHANNES HEIDENHAIN GmbH, “which may be related to, directly affect or be directly affected by or have a bearing on the Board’s decision in the pending appeal.”

**3. STATUS OF CLAIMS**

Claims 1 to 22 are pending.

Claims 1 to 19 and 21 stand rejected under 35 U.S.C. § 103(a) as unpatentable over the combination of U.S. Patent No. 6,175,109 (“Setbacken et al.”) and U.S. Patent No. 4,363,964 (“Schmitt”).

Claims 20 and 22 stand rejected under 35 U.S.C. § 103(a) as unpatentable over the combination of Setbacken et al., Schmitt, and U.S. Patent No. 7,141,780 (“Homer et al.”).

A copy of the appealed claims, *i.e.*, claims 1 to 22, is attached hereto in the Claims Appendix.

**4. STATUS OF AMENDMENTS**

In response to the Final Office Action dated October 16, 2008, Appellants filed a “Reply Under 37 C.F.R. § 1.116” (“the First Reply”) on December 16, 2008. The First Reply presented proposed amendments to claims 19 and 21 to rewrite these claims in independent form. The First Reply was considered non-compliant, by “Notice of Non-Compliant Amendment (37 CFR 1.121)” dated January 16, 2009, in that claims 20 and 22, as

presented in the First Reply, were inadvertently identified as “(New)” rather than “(Previously Presented).”

A “Response to Notice of Non-Compliant Amendment” (“the Second Reply”) was filed on February 12, 2009 to correct the identifiers associated with claims 20 and 22, and the identical proposed claim amendments, *i.e.*, rewriting each of claims 19 and 21 in independent form, were presented in the Second Reply as in the First Reply.

An Advisory Action was mailed on March 20, 2009. The Advisory Action indicates that the proposed claim amendments would not be entered for the purposes of appeal on that grounds that “[t]hey are not deemed to place the application in better form for appeal by materially reducing or simplifying the issues for appeal.” Thus, it is Appellants’ understanding that the proposed amendments to claims 19 and 21 will not be entered for the purposes of the present appeal. Accordingly, it is Appellants’ understanding that the claims as included in the annexed “Claims Appendix” reflect the current claims.

## **5. SUMMARY OF CLAIMED SUBJECT MATTER**

The present claims on appeal include two independent claims, *i.e.*, claims 1 and 18.

Independent claim 1 relates to a scanning unit (1) for scanning a measuring standard (M) including a coded track formed by a graduated scale (I) and a reference mark system (R). *Specification*, page 8, lines 2 to 7; Figure 1. According to claim 1, the scanning unit (1) includes a detector system (10) configured to scan the coded track. *Specification*, page 8, lines 21 to 26; Figures 2A, 2B. Claim 1 recites that the scanning unit (1) includes an additional detector system (11, 12) configured to scan the reference mark system (R). *Specification*, page 8, lines 21 to 26; Figures 2A, 2B. According to claim 1, the additional detector system (11, 12) includes a signal-sensitive surface (11a, 12a) configured to receive scanning signals when scanning the reference mark system (R). *Specification*, page 9, lines 1 to 8; Figures 2A, 2B. According to claim 1, the additional detector system (11, 12) includes at least two sensors (11, 12) and that each of the at least two sensors (11, 12) of the additional detector system (11, 12) is positioned to scan the reference mark system (R). *Specification*, page 9, lines 1 to 10; Figures 2A, 2B. Claim 1 recites that the additional detector system (11, 12)

12) is configured to use only one of the at least two sensors (11, 12) to scan the reference mark system (R) during operation of the scanning unit (1). *Specification*, page 9, lines 9 to 10. Claim 1 recites that the scanning unit (1) includes a differential amplifier (2) including two inputs (21, 22) and that each of the sensors (11, 12) is connected to a respective one of the two inputs (21, 22). *Specification*, page 10, lines 34 to 36; Figures 3A, 3B. According to claim 1, the scanning unit (1) includes an arrangement (13) configured to cover the signal-sensitive surface (11a, 12a) of a sensor (11, 12) of the at least two sensors (11, 12) of the additional detector system (11, 12) not used for scanning to deactivate the sensor (11, 12) not used for scanning. *Specification*, page 9, lines 9 to 23; Figures 2A, 2B.

Independent claim 18 relates to a measuring device for taking positional measurements of two assemblies which are movable in relation to one another. *Specification*, page 7, lines 1 to 4. According to claim 18, the measuring device includes a measuring standard (M) including a coded track formed by a graduated scale (I) and a reference mark system (R). *Specification*, page 8, lines 2 to 7; Figure 1. According to claim 18, the measuring device includes a scanning unit (1). *Specification*, page 8, lines 21 to 26; Figures 2A, 2B. According to claim 18, the scanning unit (1) includes a detector system (10) configured to scan the coded track. *Specification*, page 8, lines 21 to 26; Figures 2A, 2B. Claim 18 recites that the scanning unit (1) includes an additional detector system (11, 12) configured to scan the reference mark system (R). *Specification*, page 8, lines 21 to 26; Figures 2A, 2B. According to claim 18, the additional detector system (11, 12) includes a signal-sensitive surface (11a, 12a) configured to receive scanning signals when scanning the reference mark system (R). *Specification*, page 9, lines 1 to 8; Figures 2A, 2B. According to claim 18, the additional detector system (11, 12) includes at least two sensors (11, 12) and that each of the at least two sensors (11, 12) of the additional detector system (11, 12) is positioned to scan the reference mark system (R). *Specification*, page 9, lines 1 to 10; Figures 2A, 2B. Claim 18 recites that the additional detector system (11, 12) is configured to use only one of the at least two sensors (11, 12) to scan the reference mark system (R) during operation of the scanning unit (1). *Specification*, page 9, lines 9 to 10. Claim 18 recites that the scanning unit (1) includes a differential amplifier (2) including two inputs (21, 22) and that each of the sensors (11, 12) is connected to a respective one of the two inputs (21, 22). *Specification*, page 10, lines 34 to 36; Figures 3A, 3B. According to claim 18, the scanning unit (1) includes an arrangement (13) configured to cover the signal-sensitive surface (11a, 12a) of a sensor (11, 12) of the at least two sensors (11, 12) of the additional

detector system (11, 12) not used for scanning to deactivate the sensor (11, 12) not used for scanning. *Specification*, page 9, lines 9 to 23; Figures 2A, 2B.

**6. GROUND OF REJECTION TO BE REVIEWED ON APPEAL**

A. Whether claims 1 to 19 and 21 are unpatentable, under 35 U.S.C. § 103(a), over the combination of Setbacken et al. and Schmitt.

B. Whether claims 20 and 22 are unpatentable, under 35 U.S.C. § 103(a), over the combination of Setbacken et al., Schmitt, and Homer et al.

**7. ARGUMENTS**

**A. Rejection of Claims 1 to 19 and 21 Under 35 U.S.C. § 103(a)**

Claims 1 to 19 and 21 stand rejected under 35 U.S.C. § 103(a) as unpatentable over the combination of Setbacken et al. and Schmitt. For at least the reasons more fully set forth below, it is respectfully submitted that the present rejection should be reversed.

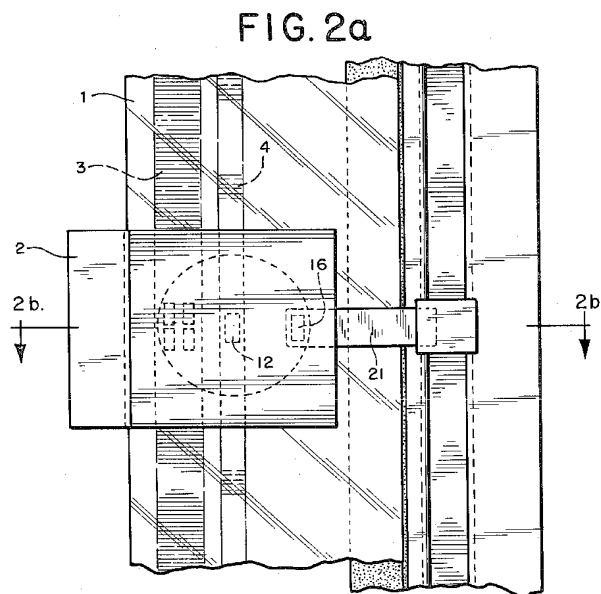
As an initial matter, the Board will note that claims 19 and 21 are addressed separately from claims 1 to 18 and that claims 1 to 18 and claims 19 and 21 are addressed under separate subheadings below.

**i. Claims 1 to 18**

Claim 1 relates to a scanning unit for scanning a measuring standard including a coded track formed by a graduated scale and a reference mark system. Claim 1 recites that the scanning unit includes: a detector system configured to scan the coded track; an additional detector system, including at least two sensors, configured to scan the reference mark system; and a differential amplifier including two inputs. According to claim 1, each of the at least two sensors of the additional detector system is positioned to scan the reference mark system. Claim 1 further recites that the additional detector system is configured to use only one of the at least two sensors to scan the reference mark system during operation of the scanning unit and that the scanning unit includes an arrangement configured to cover a signal-sensitive surface of a sensor of the at least two sensors of the additional detector system not used for scanning to deactivate the sensor not used for scanning. According to claim 1, each of the

sensors is connected to a respective one of the two inputs of the differential amplifier. Independent claim 18 includes analogous features to those included in claim 1.

The Final Office Action admits on page 3 that Setbacken et al. fails to disclose: (1) use of only one of at least two sensors to scan a reference mark system; (2) a differential amplifier including two inputs, and (3) an arrangement configured to cover a signal-sensitive surface of a sensor not used for scanning. The Final Office Action refers to Schmitt for allegedly disclosing these features. However, the occluding screen 21 described by Schmitt, which the Office Action contends constitutes an arrangement configured to cover, does not cover a sensor that is positioned to scan a reference mark system. Rather, the occluding screen 21 controls the illumination or non-illumination of photosensitive element 16 (col. 4, lines 31 to 35), which, according to Schmitt, generates a cancelling signal that tends to cancel a signal generating by photosensitive element 12 (col. 3, lines 50 to 52). The photosensitive element 16 is not positioned to scan the fixed reference mark 4. That the photosensitive element 16 is not positioned to scan the fixed reference mark 4 is plainly apparent from Figure 2a, which is reproduced below:



In other words, Schmitt fails to disclose, or even suggest, an additional detector system including at least two sensors, in which each of the at least two sensors of the additional detector system is positioned to scan a reference mark system. Rather, the only device described by Schmitt that is positioned to scan the fixed reference mark 4 is the

photoelement element 12. Thus, Schmitt fails to disclose an additional detector system configured to scan a reference mark system, in which the additional detector system includes at least two sensors, in which each of the at least two sensors is positioned to scan a reference mark system. Consequently, Schmitt also fails to disclose: an additional detector system configured to use only one of at least two sensors, which are positioned to scan a reference mark system, to scan the reference mark system during operation of a scanning unit; a differential amplifier including two inputs, each of at least two sensors, which are positioned to scan a reference mark system, connected to a respective one of the two inputs; and an arrangement configured to cover the signal-sensitive surface of a sensor of at least two sensors, which are positioned to scan a reference mark system, not used for scanning to deactivate the sensor not used for scanning.

Since the photosensitive element 16 described by Schmitt is not positioned to scan the reference marks 4, as plainly illustrated in Figure 2a, reproduced above, the photosensitive element 16 cannot properly be considered to constitute a sensor of the additional detector system in the context of the present claims. In this regard, claims 1 and 18 recite, “each of the at least two sensors of the additional detector system positioned to scan the reference mark system.” Referring to col. 4, lines 31 to 50, Schmitt describes occluding screen 21 serving to control the illumination or non-illumination of the photosensitive element 16 by the occluding screen 21. There is no mention whatsoever by Schmitt that the occluding screen controls the illumination or non-illumination of the first photosensitive element 12 or the second photosensitive element 13. Since, as indicated above, the photosensitive element 16 described by Schmitt is not positioned to scan the reference marks 4 and is, therefore, not properly considered to constitute a sensor of an additional detector system in the context of the present claims, the occluding screen 21 described by Schmitt does not constitute “an arrangement configured to cover a signal-sensitive surface of a sensor of the at least two sensors of the additional detector system not used for scanning to deactivate the sensor not used for scanning.”

In addition, the occluding screen 21 described by Schmitt does not serve to deactivate the additional photosensitive element 16. Rather, the occluding screen 21 controls the illumination or non-illumination of the additional photosensitive element 16. There is no mention by Schmitt that the occluding screen 21 deactivates the additional photosensitive element 16.

The Final Office Action contends at page 4 that “the occluding screen 21 can blocked [sic] the illumination of the other photosensitive elements 12 and 13 since the occluding screen 21 is slidably mounted to move along the measuring direction.” However, this contention belies the description of the occluding screen 21 and is apparently based on a misapprehension of that description. In this regard, the occluding screen 21 is not movable horizontally in the viewpoint of Figure 2a. Rather, the occluding screen 21 is movable vertically in the viewpoint of Figure 2a, i.e., the occluding screen is slidably mounted to move along the measuring direction.

Furthermore, the Final Office Action fails to set forth a *prima facie* case of obviousness consistent with the Supreme Court’s *KSR* decision and consistent with the provisions set forth in M.P.E.P. § 2142 *et seq.* A rejection under 35 U.S.C. § 103(a) cannot be sustained with mere conclusory statements; rather, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness. *KSR International Co. v. Teleflex Inc.*, 82 U.S.P.Q.2d 1385, 1386 (2007). Among the rationales that may support a conclusion of obviousness are: (a) combining prior art elements according to known methods to yield predictable results; (b) simple substitution of one known element for another to obtain predictable results; (c) use of known technique to improve similar devices (methods, or products) in the same way; (d) applying a known technique to a known device (method, or product) ready for improvement to yield predictable results; (e) “obvious to try” -- choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success; (f) known work in one field of endeavor may prompt variations of it for use in either the same field or a different one based on design incentives or other market forces if the variations would have been predictable to one of ordinary skill in the art; and (g) some teaching, suggestion, or motivation in the prior art that would have led one of ordinary skill to modify the prior art reference or to combine prior art reference teachings to arrive at the claimed invention. The Final Office Action does not even allege any of the foregoing rationales and fails to sufficiently articulate any findings necessary to support the present rejection.

Additionally, the present rejection is apparently based on improper hindsight. In this regard, the Final Office Action repeatedly refers to that which is considered obvious in the present tense. For example, page 4 of the Final Office Action contends that “it is obvious



that the occluding screen 21 can blocked [sic] the illumination of the other photosensitive elements 12 and 13,” and pages 11 to 12 of the Final Office Action repeat the identical contention. Of course, and as stated in M.P.E.P. § 2142:

To reach a proper determination under 35 U.S.C. 103, the examiner **must step backward in time** and into the shoes worn by the hypothetical “person of ordinary skill in the art” **when the invention was unknown and just before it was made**. In view of all factual information, the examiner must then make a determination whether the claimed invention “as a whole” would have been obvious **at that time** to that person. Knowledge of applicant’s disclosure **must be put aside** in reaching this determination, yet kept in mind in order to determine the “differences,” conduct the search and evaluate the “subject matter as a whole” of the invention. The tendency to resort to “hindsight” based upon applicant’s disclosure is often difficult to avoid due to the very nature of the examination process. However, impermissible hindsight **must be avoided** and the legal conclusion must be reached on the basis of the facts gleaned from the prior art. (emphasis added).

In view of the foregoing, it is respectfully submitted that the combination of Setbacken et al. and Schmitt fails to render unpatentable claims 1 and 18.

As for claims 2 to 17, which ultimately depend from claim 1 and therefore include all of the features included in claim 1, it is respectfully submitted that the combination of Setbacken et al. and Schmitt fails to render unpatentable these dependent claims for at least the reasons more fully set forth above in support of the patentability of claim 1.

In view of all of the foregoing, reversal of this rejection with respect to claims 1 to 18 is respectfully requested.

**ii. Claims 19 and 21**

Regarding claims 19 and 21, it is respectfully submitted that the combination of Setbacken et al. and Schmitt fails to render unpatentable these claims for at least the following additional reasons.

Claim 19 depends from claim 1 and therefore includes all of the features included in claim 1; and claim 21 depends from claim 18 and therefore includes all of the

features included in claim 18. As set forth above, the combination of Setbacken et al. and Schmitt fails to render unpatentable claims 1 and 18. As such, claims 19 and 21 are believed to be patentable over the combination of Setbacken et al. and Schmitt.

In addition, claims 19 and 21 further recite that the arrangement, which is configured to cover the signal-sensitive surface of a sensor of the at least two sensors of the additional detector system not used for scanning to deactivate the sensor not used for scanning, permanently covers the signal-sensitive surface of the sensor of the at least two sensors of the additional detector system not used for scanning. The occluding screen 21 described by Schmitt does not permanently cover the additional photosensitive element 16. Rather, as described, for example, at col. 4, lines 31 to 44, the occluding screen 21 controls the illumination or non-illumination of the additional photosensitive element 16 and functions as a switching member. Accordingly, it is respectfully submitted that claims 19 and 21 are patentable over the combination of Setbacken et al. and Schmitt for at least this additional reason.

In view of all of the foregoing, reversal of this rejection with respect to claims 19 and 21 is respectfully requested.

**B. Rejection of Claims 20 and 22 Under 35 U.S.C. § 103(a)**

Claims 20 and 22 stand rejected under 35 U.S.C. § 103(a) as unpatentable over the combination of Setbacken et al., Schmitt, and Homer et al. For at least the reasons more fully set forth below, it is respectfully submitted that the present rejection should be reversed.

Claim 20 depends from claim 1 and therefore includes all of the features included in claim 1, and claim 22 depends from claim 18 and therefore includes all of the features included in claim 18. As more fully set forth above, the combination of Setbacken et al. and Schmitt does not disclose all of the features included in claims 1 and 18. Homer et al. does not cure the deficiencies of Setbacken et al. and Schmitt. Accordingly, it is respectfully submitted that the combination of Setbacken et al., Schmitt, and Homer et al. does not render unpatentable claim 20, which depends from claim 1, or claim 22, which depends from claim 18. *In re Fine*, 837 F.2d 1071, 5 U.S.P.Q.2d 1596 (Fed. Cir. 1988) (any dependent claim that depends from a non-obvious independent claim is non-obvious).

In addition, the Final Office Action fails to set forth a *prima facie* case of obviousness consistent with the Supreme Court's *KSR* decision and consistent with the provisions set forth in M.P.E.P. § 2142 *et seq.* As indicated above, a rejection under 35 U.S.C. § 103(a) cannot be sustained with mere conclusory statements; rather, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness. *KSR*, 82 U.S.P.Q.2d at 1386 (2007). Among the rationales that may support a conclusion of obviousness are: (a) combining prior art elements according to known methods to yield predictable results; (b) simple substitution of one known element for another to obtain predictable results; (c) use of known technique to improve similar devices (methods, or products) in the same way; (d) applying a known technique to a known device (method, or product) ready for improvement to yield predictable results; (e) "obvious to try" -- choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success; (f) known work in one field of endeavor may prompt variations of it for use in either the same field or a different one based on design incentives or other market forces if the variations would have been predictable to one of ordinary skill in the art; and (g) some teaching, suggestion, or motivation in the prior art that would have led one of ordinary skill to modify the prior art reference or to combine prior art reference teachings to arrive at the claimed invention. The Final Office Action does not even allege any of the foregoing rationales and fails to sufficiently articulate any findings necessary to support the present rejection.

In view of all of the foregoing, reversal of this rejection is respectfully requested.

**8. CLAIMS APPENDIX**

A "Claims Appendix" is attached hereto and appears on the four (4) pages numbered "Claims Appendix 1" to "Claims Appendix 4."

**9. EVIDENCE APPENDIX**

No evidence has been submitted pursuant to 37 C.F.R. §§ 1.130, 1.131 or 1.132. No other evidence has been entered by the Examiner or relied upon by Appellants in

the appeal. An “Evidence Appendix” is nevertheless attached hereto and appears on the one (1) page numbered “Evidence Appendix.”

**10. RELATED PROCEEDINGS APPENDIX**

As indicated above in Section 2, above, “[t]here are no other prior or pending appeals, interferences or judicial proceedings known by the undersigned, or believed by the undersigned to be known to Appellants or the assignee, DR. JOHANNES HEIDENHAIN GmbH, ‘which may be related to, directly affect or be directly affected by or have a bearing on the Board’s decision in the pending appeal.’” As such, there no “decisions rendered by a court or the Board in any proceeding identified pursuant to [37 C.F.R. § 41.37(c)(1)(ii)]” to be submitted. A “Related Proceedings Appendix” is nevertheless attached hereto and appears on the one (1) page numbered “Related Proceedings Appendix.”

**11. CONCLUSION**

For at least the reasons indicated above, Appellants respectfully submit that the art of record does not disclose or suggest the subject matter as recited in the claims of the above-identified application. Accordingly, it is respectfully submitted that the subject matter as set forth in the claims of the present application is patentable.

In view of all of the foregoing, reversal of the rejections set forth in the Final Office Action is therefore respectfully requested.

Respectfully submitted,

Dated: August 3, 2009

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## **CLAIMS APPENDIX**

1. A scanning unit for scanning a measuring standard including a coded track formed by a graduated scale and a reference mark system, comprising:

a detector system configured to scan the coded track;

an additional detector system configured to scan the reference mark system, the additional detector system including a signal-sensitive surface configured to receive scanning signals when scanning the reference mark system, the additional detector system including at least two sensors, each of the at least two sensors of the additional detector system positioned to scan the reference mark system, the additional detector system configured to use only one of the at least two sensors to scan the reference mark system during operation of the scanning unit;

a differential amplifier including two inputs, each of the sensors connected to a respective one of the two inputs; and

an arrangement configured to cover the signal-sensitive surface of a sensor of the at least two sensors of the additional detector system not used for scanning to deactivate the sensor not used for scanning.

2. The scanning unit as recited in claim 1, wherein the scanning unit is configured to scan the measuring standard in accordance with a photoelectric measuring principle, and wherein the two sensors include photoelements.

3. The scanning unit as recited in claim 2, wherein the photoelements include photodiodes.

4. The scanning unit as recited in claim 1, wherein a first input of the differential amplifier is connected to the sensor used for scanning the measuring standard and a second input of the differential amplifier is connected to the deactivated sensor.

5. The scanning unit as recited in claim 1, wherein each sensor is configured to be optionally activated with the other sensor deactivated, each sensor configured to be optionally connected to each input of the differential amplifier.

6. The scanning unit as recited in claim 5, wherein the sensors are connected to the inputs of the differential amplifier so that the sensor used for scanning the measuring standard is connected to a first input of the differential amplifier and the other, deactivated sensor is connected to a second input of the differential amplifier.

7. The scanning unit as recited in claim 6, wherein the sensor used for scanning the measuring standard is connected to an inverting input of the differential amplifier.

8. The scanning unit as recited in claim 1, wherein the sensors are positioned directly adjacent to one another.

9. The scanning unit as recited in claim 1, wherein the signal-sensitive surfaces of the sensors are made of the same material.

10. The scanning unit as recited in claim 1, wherein the signal-sensitive surfaces of the sensors are substantially the same size.

11. The scanning unit as recited in claim 1, wherein electrical connecting lines between the sensors and a corresponding input of the differential amplifier are conforming.

12. The scanning unit as recited in claim 1, wherein electrical connecting lines between the sensors and a corresponding input of the differential amplifier have substantially a same length.

13. The scanning unit as recited in claim 1, wherein the sensors are configured to scan reference marks of the reference mark system having exactly one type.

14. The scanning unit as recited in claim 1, wherein the sensors are configured to scan different reference marks of the reference mark system.

15. The scanning unit as recited in claim 14, wherein the reference mark system includes coded and uncoded reference marks.

16. The scanning unit as recited in claim 14, wherein the reference marks system includes distance-coded reference marks and uncoded reference marks.

17. The scanning unit as recited in claim 1, wherein the coded track is arranged as an incremental track.

18. A measuring device for taking positional measurements of two assemblies which are movable in relation to one another, comprising:

a measuring standard including a coded track formed by a graduated scale and a reference mark system; and

a scanning unit, including:

a detector system configured to scan the coded track;

an additional detector system configured to scan the reference mark system, the additional detector system including a signal-sensitive surface configured to receive scanning signals when scanning the reference mark system, the additional detector system including at least two sensors, each of the at least two sensors of the additional detector system positioned to scan the reference mark system, the additional detector system configured to use only one of the at least two sensors to scan the reference mark system during operation of the scanning unit;

a differential amplifier including two inputs, each of the sensors connected to a respective one of the two inputs; and

an arrangement configured to cover the signal-sensitive surface of a sensor of the at least two sensors of the additional detector system not used for scanning to deactivate the sensor not used for scanning.

19. The scanning unit as recited in claim 1, wherein the arrangement configured to cover the signal-sensitive surface of the sensor of the at least two sensors of the additional detector system not used for scanning to deactivate the sensor not used for scanning permanently covers the signal-sensitive surface of the sensor of the at least two sensors of the additional detector system not used for scanning.

20. The scanning unit as recited in claim 1, wherein the differential amplifier is configured to suppress electrical interference occurring at the sensors or connecting lines that

connect the sensors to the respective inputs of the differential amplifier by subtraction of signals received by the differential amplifier from the sensors.

21. The measuring device as recited in claim 18, wherein the arrangement configured to cover the signal-sensitive surface of the sensor of the at least two sensors of the additional detector system not used for scanning to deactivate the sensor not used for scanning permanently covers the signal-sensitive surface of the sensor of the at least two sensors of the additional detector system not used for scanning.

22. The measuring device as recited in claim 18, wherein the differential amplifier is configured to suppress electrical interference occurring at the sensors or connecting lines that connect the sensors to the respective inputs of the differential amplifier by subtraction of signals received by the differential amplifier from the sensors.



## **EVIDENCE APPENDIX**

No evidence has been submitted pursuant to 37 C.F.R. §§1.130, 1.131, or 1.132. No other evidence has been entered by the Examiner or relied upon by Appellants in the appeal.

### **RELATED PROCEEDINGS APPENDIX**

As indicated above in Section 2 of this Appeal Brief, “[t]here are no other prior or pending appeals, interferences or judicial proceedings known by the undersigned, or believed by the undersigned to be known to Appellants or the assignee, DR. JOHANNES HEIDENHAIN GmbH, ‘which may be related to, directly affect or be directly affected by or have a bearing on the Board’s decision in the pending appeal.’” As such, there no “decisions rendered by a court or the Board in any proceeding identified pursuant to [37 C.F.R. § 41.37(c)(1)(ii)]” to be submitted.